STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

FILED

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INDIANA UTILITY REGULATORY COMMISSION

In the Matter of the Petition of	)	
Indiana Bell Telephone Company,	)	
Incorporated d/b/a Ameritech Indiana	)	
Pursuant to I.C. 8-1-2-61 For a Three	)	**Cause No. 41657**
Phase Process For Commission	)	
Review of Various Submissions of	)	
Ameritech Indiana to Show Compliance	)	
with Section 271(c) of The Telecommunications	)	
Act of 1996	)	

Z-TEL'S REPLY TO AMERITECH INDIANA'S MARCH 8, 2000 COMMENTS REGARDING Z-TEL'S PERFORMANCE REMEDY PLAN

On February 9, 2001, Z-Tel Communications, Inc. (Z-Tel) submitted its Remedy Plan and its response to the "Principles for Indiana Remedy Plans" contained in the November 9, 2000 Commission Docket Entry in this Cause. It is Z-Tel's contention that its Zone Parity Plan complies with the forty-four principles detailed in the Commission's Docket Entry. On March 8, 2001, Z-Tel commented on the Performance Remedy Plan submitted by Ameritech Indiana on February 9, 2001. In this response, Z-Tel comments on the Reply Comments submitted by Ameritech Indiana on March 8, 2001.

In its March 8, 2001 filing Ameritech put forth several arguments. Each is addressed in turn.

Argument 1. To Be Meaningful, A Remedy Plan Should Only Assess Remedies When Poor Performance Occurs

While Ameritech Indiana asserts that only its plan satisfies the condition that remedies are paid only when poor performance occurs, it is in fact the only plan that does not assess remedies when poor performance occurs. Neither the Joint CLEC or Z-Tel's Zone Parity Plan levy penalties when the CLEC receives better performance than the ILEC. In the Joint CLEC plan, the computed modified z-score will be positive when the CLEC receives better performance than Ameritech (by definition), so that no penalties are levied. Contrary to Ameritech Indiana's assertions, it is simply impossible for the Joint CLEC computations to levy penalties when a CLEC receives better service.

Similarly, the Zone Parity Plan will not levy penalties unless the CLEC receives a level of service that is worse than that allowed by the Zone Parity Benchmark. If the CLEC receives service above the benchmark level, then no penalty is applied.

Alternately, in the Ameritech Indiana Plan, the application of the K-Table ensures that even when a statistical finding of discrimination is found, penalties will not be paid. For example, assume a CLEC has 100 statistical tests performed in a given month and 10 of these measures fail with z-score of 5.00 (about 3 times the critical z-score, but any z-score larger than 1.65 can be used to make the point). Of these 10 failures, 8 are excluded from payment based on the application of the K-Table. A statistically significant z-score is a strong finding of discrimination (in this case, no less than 99.99% certainty), yet 80% of the discrimination is ignored by the Ameritech Indiana Plan.

Argument 2. The CLEC plan is Designed To Penalize Ameritech Indiana for Random Variation, Even Where Poor Performance Has Not Occurred.

Ameritech Indiana claims that the stare-and-compare approach to benchmarks ignores random variation. Ameritech Indiana's position on this matter reveals a profound ignorance of statistical principles In the context of a means-difference test, random variation is a property of the computed modified z-score and the magnitude of random variation is measured from the properties of the standard normal distribution (e.g., only 5% of the standard normal distribution lies above 1.65).

Computing a modified z-score requires five pieces of data: 1) the Ameritech Indiana mean; 2) the CLEC mean; 3) the Ameritech Indiana standard deviation; 4) the Ameritech Indiana sample size; and 5) the CLEC sample size. For benchmark measures, there is no Ameritech Indiana mean, standard deviation, or sample size because, by definition, Ameritech Indiana does not provide the relevant service to itself. Thus, three integral parts of the modified z-score are unknown (because they do not exist). As a consequence, a modified z-score cannot be computed so there is nothing to base any arguments on "random variation" or Type I and Type II error.

The "statistical procedure" Ameritech Indiana proposes for benchmarks is absurd, and is not statistical procedure at all; there is not a single academic statistician on this planet that will honesty say otherwise. The "statistical test" proposed by Ameritech Indiana is simply a comparison of the difference between the benchmark and CLEC average to a fixed value of 1.65. Alternately, the modified z-test requires one to divide a means difference by ILEC standard deviation (which does not exist for benchmarks) multiplied by the square root of the inverse CLEC and ILEC sample sizes. It is this division of the

means difference by the standard deviation of the z-test that produces a number that can meaningfully be compared to the standard normal distribution.

As an example of Ameritech Indiana's bogus "statistical procedure" for benchmarks, consider the case of a 90% benchmark where the CLEC receives an 89% service level. The difference in the service level is 0 01, which compared to the value of 1.65 is determined to be "statistically insignificant." In fact, any difference between two percentages will be less than 1.65. Recognizing this problem, Ameritech Indiana proposes simply to multiply the percent difference by 100, in order to get the difference on the same scale as the z-score. Of course, dividing the z-score by 100 would produce the same result, but using a z-score of 0.0165 is so apparently ridiculous that Ameritech Indiana has chosen to avoid using that equivalent approach to the problem. The multiplication of the difference by 100, a requirement that illustrates the fact that the Ameritech test violates the mathematical principle of dimensional homogeneity, is required because the means difference has not been scaled by the standard deviation of the z-test (which is always less than 1.00 for percent means and never, under any consequence, exceeds 0.50). While this multiplication (or division) by 100 may seem trivial to some (including Ameritech Indiana), to those with a greater aptitude for mathematics and statistics it illustrates the point that the Ameritech Indiana procedure makes no sense at all. For the example provided above, the Ameritech Indiana procedure indicates that no difference exists (100 times 0.01 is less than 1.65).

However, if these same numbers are used in the context of a modified z-test, the difference is highly statistically significant. For example, assume that the 90% is not a benchmark but an ILEC mean. Statistical theory suggests that the standard deviation is

0.90*(1-0.90) divided by the square root of Ameritech Indiana's sample size. Assume a highly conservative Ameritech Indiana sample size of 100 observations, and 30 observations for the CLEC (the z-score will increase with sample size). Computing the modified z-score based on these assumption, the difference of 0.01 is found to be statistically significant at the 0.00000005 level (the modified z-score is 5.33). Yet, the Ameritech calculation suggests that the result is not statistically significant.

While it is tempting to launch into a discussion of the Type I and Type II error implications of Ameritech Indiana's bogus benchmark test, there are no Type I or Type II error consequences for benchmarks. Without an ILEC standard deviation, there can be no statistical test and, if there is no statistical test, there can be no Type I and Type II error. This fact is rudimentary statistics, for which Ameritech Indiana apparently has no comprehension.

A proper characterization of Ameritech Indiana's benchmark test is that it is identical to the CLEC test except Ameritech Indiana arbitrarily reduces the benchmark by 1.65 (or 0.0165) for every benchmark measure, regardless of the numerical standard set for the benchmark. This fact is easily illustrated. Let the benchmark multiplied by 100 be B and the CLEC mean multiplied by 100 be C. "Statistical significance," a term used loosely here, is determined when $(B - C) \geq 1.65$. A little algebra shows that this "statistical significance" is determined when $C \geq B - 1.65$. Therefore, the Ameritech benchmark test is nothing more than the arbitrary reduction in the benchmark (B) by 1.65 (or 0.0165 without multiplying the benchmarks by 100). There is nothing statistical about the procedure at all. If the Indiana Commission wants to reduce the benchmarks by 1.65 (or

0.0165), then just reduce the benchmarks. This approach avoids the appearance of ignorance and in no way alters Ameritech Indiana's proposed treatment of benchmarks. Ameritech Indiana's failure to comprehend these most basic of statistical principles should encourage the Indiana Commission to seek out a non-statistical approach to performance measurement, whether using the Zone Parity Plan or some other set of non-statistical procedures.

Argument 3. The CLEC Plan Uses Large-Sample Tests for Small Sample Sizes

To Z-Tel's knowledge, the CLEC plan uses permutation tests for small samples. Thus, Ameritech Indiana's criticism is baseless. Additionally, Ameritech Indiana drops the ball on the statistics once more in its criticism of the CLEC plan. Specifically, Ameritech Indiana states in its Comments that "power is simply the probability that disparity is declared when disparity exists. It provides no indication of how often a test will find incorrectly disparity where none exists (p. 16)." In the context of the CLEC Plan, the statistical errors are balanced (i.e., Type I error equals Type II error), so the power of the test is an indicator of the probability that disparity is declared when disparity exists and that parity is declared with parity exists. Within the context of the Ameritech Indiana Plan, the Type I error is fixed so the power of the test need not say anything about the Type I error rate.

Argument 4: Z-Tel's "Non Statistical" Plan Is A Non-Starter

Not only does Ameritech Indiana appear incapable of understanding the statistics of performance plans, but the company is equally inept at understanding the non-statistical approach offered by Z-Tel. First, Ameritech Indiana argues that Zone Parity does not account for random variation. Given that random variation is a statistical concept, any

non-statistical plan will not account for random variation. However, the Zone Parity Benchmarks do incorporate information from the distribution of the underlying data and create wiggle room for variations in service over time. The decision rule of Zone Parity, however, is not statistical in nature. Thus, random variation (in terms of Type I and Type II error rates) are irrelevant.

Second, Z-Tel does not assume that Zone 0 will always equal 70% as Ameritech Indiana assets. The Zone Parity Benchmarks are determined from the underlying data for each individual measure. Zone 0 and Zone 1 are separated at the mean, while Zone 1 and Zone 2 are separated at the 95^{th} percentile (or the quintile of order 0.95). For percent measures, the 10% slack, in almost every case, exceeds the "slack" inherent in the modified z-test (where this slack in the modified z-test is equal to the standard deviation of the z-test multiplied by the critical z-statistic). Thus, the Zone Parity Plan is always more lenient for percent measures than the statistical approach proposed by Ameritech Indiana. For most distributions, the interval computation of Zone Parity produces fewer "occurrences" than Ameritech Indiana's calculation, but the Zone Parity calculation, unlike the Ameritech calculation, actually measures occurrences.

Argument 5: There Is No Basis For Z-Tel's Assumption That Performance Data Will Fit Prescribed Zones.

Ameritech Indiana's criticism could not be further from the truth. The "prescribed zones," called Zone Parity Benchmarks, are derived from the underlying ILEC performance data. Thus, the fit is guaranteed. Ameritech Indiana's assertion that "it is just unrealistic to assume that performance data will always follow the same 70-25-5 regime" is irrelevant. The 70-25-5 regime was a hypothetical illustration. In practice, the Zone

Parity Benchmarks are derived from ILEC data and will equal whatever the data says they equal.

Despite their mis-understanding of the Zone Parity Benchmarks, Ameritech Indiana's numerical example that illustrates the Zone Parity calculations is interesting. In the example, 94% of all observations are Zone 0 observations so that no penalty is due for these occurrences. The remaining 6% of observations are assumed to be in Zone 2, the zone of worst performance. Ameritech Indiana presumes that because 94% of CLEC customers get service in one-second, but that 6% of customers get service is 30 hours, that "no one could seriously accuse the incumbent of discrimination (p. 18)." Why not? Ameritech provides only 5% of its customers in intervals longer than 30 hours (the worst quality), but provides 6% of CLEC service in that interval. Is that not discrimination? In practice, the penalty impact of this example is trivial. The number of occurrences for which fines apply are 0.5% of the total CLEC observations. Because of the rounding rule, if the CLEC observations are equal to or less than 100, then no penalty is due.

Now, consider the implication of the Ameritech Indiana Plan in a similar example Again, assume that all Ameritech Indiana customers get service in 24 hours. Alternately, about half of the CLEC customers get service is 12 hours, while the other half gets service in 36 hours. In this example, half of the CLEC customers get service that is 50% worse than all of Ameritech's customers. Yet, the Ameritech Plan would find no fault because the average service level is identical. In effect, good service for some customers offsets the bad service for the others (an inherent property of the average). The CLEC's consumers, however, would not likely view the 36 hours as being immaterial, and those customers receiving bad service are not compensated by service quality of the others.

Ameritech also argues about the Type I error consequences of the Zone Parity Plan. In fact, because Zone Parity does not employ a statistical decision rule, the plan cannot be guilty of either a Type I or Type II error. Zone Parity is a benchmark approach, and benchmarks, by definition, are fixed standards. Type I and Type II errors are possible only when a statistical decision rule is used, and Zone Parity does not employ a statistical decision rule. In light of that indisputable fact, Ameritech's claim that "Z-Tel's plan would yield a Type I error rate of over 25%" is baseless.

Argument 6. There Is No Basis For Z-Tel's Attempt To Compare Present Data To Past Data.

The benchmarks measures contained in the Ameritech Indiana Plan establish fixed levels of service quality. These fixed levels of service quality are constant over time (equal to the established benchmark minus 1.65), and do not vary by the seasons or other performance altering factors. In light of that fact, Ameritech Indiana's criticism of Zone Parity because its standards are fixed over time is no less applicable to their own plan.

As for the general criticisms of non-statistical methods, neither the Telecommunications Act nor the FCC states that parity must be defined in terms of a statistical test of a zero means difference. The FCC does acknowledge that statistical testing may be a useful tool, and Z-Tel does not disagree. However, statistics introduce a set of problems that are often difficult to solve (e.g., small sample sizes, statistical error, and so forth). Further, as illustrated by Ameritech's own erroneous observations about statistics put forth in the their Comments, statistical theory can be difficult to understand, adding unnecessary complexity to decisions that can be made in a simpler manner.

Furthermore, the reason Zone Parity recommends using historical data (the calculations could be performed using current data) is that an overall reduction in quality will be more

harmful to CLECs than the ILEC because most of the measures are capturing performance that occurs when customers migrate between carriers. Given that Ameritech currently provides service to nearly every customer, the problems of provisioning primarily affect the CLECs. Additionally, each interaction of the customer with the CLEC defines the entire population upon which quality judgments are based. Many consumers will have a number of experiences with the ILEC, so one instance of bad performance may not affect the average perception of quality by a significant amount. Ameritech Indiana also criticizes Z-Tel's plan because it "is only concerned with outcomes (how long performance takes) not with the reasons for those outcomes (p. 20)." This point is true. What is unclear is why that is problematic. Bad service is bad service, regardless of its cause, and will impair the ability of CLECs to compete with Ameritech Indiana. As for Ameritech Indiana's concern that Zone Parity will not detect CLEC caused problems with service quality, neither does the Ameritech Indiana Plan. The ILEC mean, standard deviation, and sample size possess no magical powers that allow the combination of the three with the CLEC mean and sample size to reveal the incentives and behavior of a CLEC. Indeed, Ameritech Indiana makes the point: "Ameritech's tests are conservative because they detect differences that are significant at a numerical level without addressing the cause of those differences (p. 21)."

Argument 7. To Be Meaningful, The Remedy Amount Should Reflect The Impact Of The Performance Measure And The Volume Of Customers Affected.

Zone Parity is the only plan before the Indiana Commission that accurately computes the volume of customers affected. However, a measure-based system certainly is a reasonable alternative to a transactions-based system.

For a number of reasons, the per-measure approach of the CLEC Plan is more reasonable than a per transaction penalty mechanism proposed by Ameritech Indiana. First, and most obviously, it is impossible to measure the number of transactions when statistical procedures are used to detect discrimination for interval measures. Consider a CLEC with 100 orders in one month. Assume that Ameritech Indiana provides service to all of its customers in one day, and assume that 90 of the CLEC customers get service in 1 day and 10 get service in 5 days. The average level of service for the CLEC is 1.4 days. The z-statistic for this level of service is about 4.00. Note that only 10% of the CLEC customers were discriminated against, but Ameritech Indiana's calculations indicate that about 40% of the CLEC customers were discriminated against.

Now, consider a case where all 100 CLEC customers get service in 1.4 days. The ModZ is identical to the previous example and the Ameritech Indiana calculations indicate that 40% of the CLEC customers were discriminated against, when in fact all 100 were. Clearly, Ameritech Indiana's calculations of disparity cannot measure the volume of customers affected (at least for interval measures). Further, because these two examples of discrimination are probably very different in their impact on competition, it is odd that Ameritech Indiana's Plan finds no difference between the two widely disparate forms of discrimination.

The fact that Ameritech Indiana's procedures cannot measure the volume of customers affected is made most obvious by the fact that the plan proposes to truncate the volume at 100%. If the calculations indeed measured transactions, then by definition, the volume could not exceed 100%. The fact that the volume can exceed 100% proves that the calculations do not and cannot count transactions. If the volume calculation is some index

of transactions and severity, then there is no reason to truncate the gap at 100%, since 100% of the customers can experience discrimination of varying degrees. The Ameritech Indiana calculations make no sense in terms of capturing the volume of affected customers. Alternately, for percent measures, Ameritech Indiana's calculation does compute the volume affected, but cannot indicate the severity of discrimination.

This discussion illustrates an important point: it is not possible to measure two very different things--the number of discriminatory transactions and the severity of the discrimination for those transactions--with a single measurement "tool" like that proposed by Ameritech Indiana. Even if the Ameritech procedure could measure the number of transactions, which it cannot, it could not simultaneously measure the severity of discrimination for those transactions. Any procedure like the parity gap that counts occurrences of discrimination cannot, at the same time, measure the severity of the discrimination. It is easy to show, however, that Zone Parity does measure both severity and occurrences. The CLEC plan, alternately, abandons the effort to measure transactions and focuses what is measurable – the means difference.

Furthermore, the measure-based system makes a lot of sense when you consider the nature of the discriminatory behavior that we are attempting to control with the performance plan. Ameritech Indiana makes the decision as to whether or not to provide parity of service, not the number of orders to which it will provide that service. In other words, Ameritech Indiana decides to provide a lesser quality of service to the CLEC, but does not choose to discriminate against customers 1, 5, 9, and 150 as opposed to customers 2, 8, 88, and 101. This latter view of discrimination--inherent to the transaction approach--seems a bit far-fetched.

In addition, if the decision to discriminate is made, it is not true that all orders will receive discriminatory service. Rather, the CLEC's distribution will shift away from parity, allowing some customers to receive an acceptable level of service while others receive discriminatory service. The decision, however, is to provide discriminatory service, irrespective of the number of consumers receiving discriminatory service. There is a good case, therefore, that the penalty should focus on the decision, rather than the observed consequences. The measure-based system does so, whereas the transaction system does not. In common parlance, the measure-based system is a treatment of the disease; the transaction-based system is a treatment of the symptoms alone.

On the issue of per-measure payments, Ameritech contends, "if the goal is increased competition in Indiana, the CLEC proposal is not the way to get there (p. 24)." This statement is comical. Ameritech Indiana, who has every incentive to ensure competition never happens, is making suggestions for how to and how not to increase competition in its markets. Z-Tel trusts that the Indiana Commission will see through Ameritech's "briar rabbit" analysis of performance plans.

With respect to the penalties of the Zone Parity Plan, Ameritech Indiana makes a number of meaningless observations. The Zone Parity Plan's penalty calculations are very similar (by intent) to the Ameritech Indiana Plan. Contrary to Ameritech Indiana's claims, Z-Tel does not recommend that penalties be adjusted upwards by the probability of detection. Whatever penalty level is chosen should already incorporate that adjustment. Ameritech Indiana's assertion that Z-Tel's plan "is nowhere near perfect in detecting poor performance" is daft. Ameritech Indiana's grasp of statistics appears to

match its knowledge (or lack thereof) of economics. No plan will detect discrimination perfectly, as Ameritech freely admits (i.e., the Type I error problem).

Ameritech Indiana's claim that Zone Parity corrects for Type II error but not Type I error is wrong. Zone Parity is plagued by neither error so adjustments are not required.

Argument 8. Ameritech's Plan Provides A Reasonable And Practical Structure For Testing Performance.

Ameritech Indiana criticizes the Zone Parity plan because Ameritech Indiana feels that the plan has unworkable components. In fact, as Ameritech Indiana recognizes, the components are not unworkable but unspecified The reason the Zone Parity Plan does not specify with precision particular elements of the plan is that Z-Tel recognizes that the Indiana Commission may want to participate in decisions regarding the exact specification of the Zone Parity Benchmarks and what the penalty levels should be. Further, performance measures and aggregation levels vary by state Thus, the penalties in one state may not be suitable for another state. Rather than propose rigid penalties that may not be suitable to a state, the Zone Parity Plan outlines a general conceptual framework for making an educated guess on penalty levels. Most of the parameters of that framework can be easily specified, since the goal is only to form an educated guess (which is the best we can do). Ameritech Indiana apparently believes that penalties based on nothing (as in its plan) are preferred over those that can be derived from a conceptual framework that captures the essence of the problem at hand.

WHEREFORE, Z-Tel respectfully requests the Commission to adopt the Zone Parity Plan and for all other relief appropriate.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby affirm that I have posted this to the Ameritech 271 website, this 9th day of April, 2001.

Claudia J. Earls /RKJ

Claudia J. Earls